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AVIATION SURVEY

**Progress Limited With
Safety and Safety
Aeronautical
Proceeds**



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FEDERAL AVIATION ADMINISTRATION

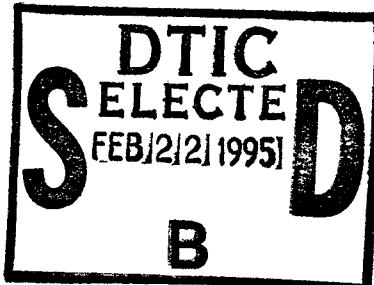
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Resources, Community, and
Economic Development Division

B-246602

March 31, 1992

The Honorable James L. Oberstar
Chairman, Subcommittee on Aviation
Committee on Public Works and
Transportation
House of Representatives



Dear Mr. Chairman:

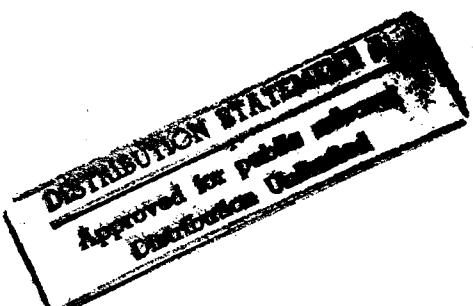
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In recent years rising pressures on the airline industry have prompted the Federal Aviation Administration (FAA) to call for improved air safety. Since the Airline Deregulation Act of 1978, air traffic has increased markedly and economic pressures have driven many airlines out of business. FAA became concerned that some airlines were focusing more on profit than on safety and were not adequately monitoring compliance with safety regulations. FAA acknowledged that its limited corps of inspectors (about 2,600) cannot police every aspect of the industry all the time.

As a result, FAA's Administrator announced two major initiatives to improve air safety—the internal evaluation, or self-audit, program and the voluntary disclosure program. The self-audit program encourages airlines to voluntarily develop improved mechanisms to evaluate all basic areas—maintenance, flight operations, and security. The voluntary disclosure program encourages airlines to report safety problems with the promise of amnesty from any fine or penalty if they take corrective actions approved by FAA. As you requested, we examined airline participation in these programs and the adequacy of FAA's guidance and oversight of them. As agreed, we did not review the applicability of the self-audit and voluntary disclosure programs to airline security programs.

Results in Brief

Although the self-audit and voluntary disclosure programs were announced twice—first in 1987 and then in 1990—progress in implementing both programs has been limited. Of the four major and six smaller airlines we visited, only one believed it met, or planned to meet, FAA's self-audit guidelines. These 10 airlines carried about 57 percent of the flying public in 1990. Similarly, as of September 1991, voluntary disclosures were limited to 292 reports from 96 airlines, or about 3 percent of the 3,031 eligible to participate. The industry appears to be in a "wait and see" posture for two basic reasons.



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First, the airlines are skeptical that program benefits outweigh their costs. Airlines acknowledge that the self-audit program could marginally increase operational efficiency and that voluntary disclosure savings—they will not have to pay fines—provide a significant incentive to participate. However, the airlines doubt that the programs will provide more than a marginal increase in safety and are concerned that any benefits could be overshadowed by extra staff and other costs associated with the self-audit program. They also fear the potential losses in revenue if FAA cannot protect voluntary disclosures of safety violations from release under the Freedom of Information Act.

Second, shortcomings in FAA program administration have resulted in confusion among airline officials and FAA inspectors alike and compounded airline doubts about the programs. Ambiguously written guidance—still in draft form—does not clearly answer basic airline questions, including the type and structure of self-audit organizations that FAA desires and the changes that would be needed to existing procedures for overseeing aircraft maintenance and flight operations. FAA inspectors told us that program training was inadequate to answer airline officials' questions. Finally, FAA is viewed as taking a "hands off" approach to oversight. FAA does not plan to monitor or approve airline self-audit programs and has assigned few staff to analyze voluntary disclosures and determine trends in safety problems. FAA officials state that they have focused their resources on program advocacy, not implementation. Without more FAA commitment, these programs will have little chance of significantly affecting aviation safety.

Background

Air traffic increased by 83 percent between 1982 and 1990, challenging the nation's air safety systems. Although traffic decreased in 1991, FAA projects an additional 76-percent growth by the year 2002. Such economic pressures as fare wars, high long-term debt, and other problems have also challenged the industry. Major airlines—such as Eastern, Pan American, and Trans World Airlines—have declared bankruptcy, and over 100 smaller airlines have gone out of business. Services have become increasingly concentrated in fewer companies with larger, more complex operations.

FAA and industry studies have found that airlines' safety evaluation systems are sometimes inadequate, lacking thoroughness and sufficient management support for corrective action. According to FAA, safety needs to be improved to keep pace with industry changes. FAA acknowledges that

its approximately 2,600 inspectors cannot police every aspect of the industry and believes that positive incentives are needed for airlines to identify their own safety problems and increase investment in prevention. Industry observers also have long recommended that airlines develop better, more formal safety programs similar to FAA's self-audit program.

In a 1987 speech the FAA Administrator called on airlines to develop self-audit and voluntary disclosure programs. At that time, FAA planned to test the programs and, if they were successful, make them mandatory for large and small airlines, as some observers have recommended. The plan lost momentum, however, when the Administrator left office and FAA did not issue guidelines.

A new FAA Administrator reannounced the programs in voluntary form in March 1990. Draft guidance covering both programs was published in October 1990. The self-audit guidance calls for airlines to (1) develop clearly defined evaluation organizations and ensure their independence, (2) report evaluation results directly to the president or other top managers to ensure that they are involved in resolving safety problems, (3) conduct continuous in-depth analyses of such problems, and (4) develop written audit schedules and corrective action plans and complete records.

The voluntary disclosure program extends amnesty for penalties if airlines discover a violation, report it promptly, and put in place corrective actions approved by FAA. FAA officials believe this amnesty provides a significant incentive to self-report because if FAA discovers a violation, it can assess fines ranging from \$1,000 to \$10,000 per occurrence.

Although 11 major airlines have carried about 95 percent of scheduled passengers in recent years, 3,031 airlines are eligible to participate in both programs. During the 12 months ending September 1990, we reviewed four major airlines that had carried 56.4 percent of the nation's scheduled passengers and six smaller airlines that carried another 0.4 percent.

Airline Participation Limited

Airline officials and FAA inspectors alike characterized the industry as still in a "wait and see" posture toward the programs. Only one major airline we visited thought its evaluation system met overall self-audit guidelines. No others planned to meet the draft guidelines. Voluntary disclosures also have lagged well behind violations identified by FAA inspectors. FAA field officials generally acknowledged that participation has been limited. Given that both programs are voluntary, basic concerns about program costs and

benefits and general confusion about program provisions erode much of the incentive to participate.

Most airlines we visited—large or small—did not believe that their evaluation systems would meet self-audit guidelines, particularly those that call for clearly defined organizations separate from the control of those who supervise the work under review. Such independence is an important safeguard against those who are unable to recognize or willingly admit shortcomings within their areas of responsibility. Seven of the 10 airlines we visited did not have dedicated evaluation departments—none had them in flight operations—allowing personnel to review their own work areas without independent oversight. (App. I compares the organization of a typical airline with FAA's organization models.)

Another prevalent problem involved FAA calls for direct reporting of evaluation results to airline presidents or their equivalent to help ensure their involvement in resolving safety problems. Only one major and three smaller airlines stated that they met this guideline in maintenance and flight operations. Most airlines reported audit results to lower-level officials responsible for managing the areas under review. (App. II details the 10 airlines' compliance with FAA's self-audit guidelines.)

Similarly, although 8 of the 10 airlines we visited had reported safety violations, overall participation in the voluntary disclosure program has been limited. According to FAA records, as of September 1991 voluntary disclosures were limited to 292 reports from 96 airlines, or about 3 percent of the 3,081 eligible airlines. FAA inspectors discovered over six times as many violations (1,828) involving 556 airlines during the same 19-month period. FAA headquarters officials pointed out that the inspection findings were under review and that some may result in a finding of no violation.

An FAA review of 56 voluntary disclosure reports found that about 93 percent focused on maintenance problems. Consistent with the lack of self-audit programs in flight operations, only 7 percent of the reports identified flight operations problems. Nearly all reports came from large airlines. FAA inspectors believe many airlines are reporting only problems that FAA is likely to find and are stating that they have learned little that would not be identified during routine inspections. (App. III summarizes 39 self-disclosures that we reviewed.)

Airlines Skeptical of Program Benefits

The self-audit and disclosure programs are voluntary, and as long as that is the case, it will be important that their costs and benefits are clearly weighed. Our discussions with airline, FAA, and industry association officials indicate that the industry generally supports the programs' concepts but is skeptical that they will have more than a marginal effect on safety. Airline officials acknowledged that voluntary disclosure savings provide a significant incentive to participate and that the self-audit program could marginally increase operational efficiency. However, airline officials were concerned that the extra costs to hire new personnel or outside groups to meet self-audit organizational guidelines could overshadow any benefits from the program.

In addition, the airlines do not want voluntary disclosure reports released to the public but fear that FAA cannot prevent their release through the Freedom of Information Act. If released, any savings in avoided fines could be overshadowed by costs in lost ridership. According to officials, such information is not subject to disclosure as long as the airlines are in possession of it. However, once released to FAA the reports become subject to the act and the public may request their release. FAA believes it can legally deny access to most—if not all—of these reports on the basis that their release could harm FAA and the airlines. However, FAA's guidelines acknowledge the possibility of release and state that airlines will be notified if FAA is required to disclose the reports. The airlines did not view FAA's statements as sufficient assurance that it could protect the reports from disclosure.

Shortcomings in Program Administration Compound Industry Skepticism

Shortcomings in FAA program administration have also confused airline officials and FAA inspectors alike and compounded airline doubts about the programs. Written guidance is ambiguous on important areas of concern to the industry, FAA inspector training has been limited, and FAA was viewed as taking a "hands off" approach to oversight. These problems have left the airlines confused and hesitant to commit to the programs.

Written Guidance Ambiguous

Most airline officials said FAA's guidelines—particularly the self-audit guidelines—did not provide sufficient information to decide whether to participate, and 88 percent of the 26 FAA inspectors we interviewed told us that program guidance was inadequate to answer airline officials' questions. These officials told us the guidelines are too abstract, simply adding self-audit provisions to existing systems without clearly explaining

what FAA wants or how it can be integrated with existing corporate structures.

Some major airlines were also concerned that FAA wants evaluation groups located in an organization outside of vice presidents for maintenance and flight operations and that the groups report their results directly to the president. In addition, according to one corporate executive, self-audit guidance implies but never clearly states that major airlines should have dedicated, independent audit organizations rather than use potentially less expensive outside groups or part-time personnel. The guidance states that only operating size "may" justify a dedicated evaluation group with full-time personnel and further confuses the issue by stating that the organizational models should not be considered as guidance for what is acceptable.

The confusion over what FAA really wants was particularly prominent in the maintenance area. Since at least the early 1980s, FAA's continuing analysis and surveillance regulations have required airlines to have an audit function in maintenance but not flight operations. The self-audit program encourages airlines to voluntarily upgrade their existing audit systems and apply them across all airline activities. However, continuing analysis and surveillance regulations do not require the audit function to be independent, and major airlines we visited often gave vice presidents dual responsibility for managing overall maintenance or flight operations, as well as overseeing safety evaluations in those areas. Generally, the airlines and FAA inspectors interpreted this situation as not meeting self-audit guidelines for independent, objective evaluations. FAA's guidance does not specifically address this arrangement, and without a specific prohibition the airlines were reluctant to change it.

The airlines were also concerned that FAA may be linking the self-audit and voluntary disclosure programs. FAA discusses both programs in the same draft guidance. It states that self-audit programs are not necessary to participate in the voluntary disclosure program. However, FAA also states that inspectors may require adoption of self-audit procedures as corrective action for reported safety problems. None of the 26 inspectors we interviewed had used this provision to require adoption of the self-audit guidelines. They told us that FAA guidance did not explain how to relate reported problems to the absence of self-audit elements or define the limits of their authority to use it to "push" for acceptance of the voluntary self-audit program. The airlines were uniformly against any linkage.

Airline officials and FAA inspectors were also frustrated by the fact that program guidance was still in draft form nearly 2 years after the programs were reannounced. Airline officials were reluctant to risk a "guessing game" and make organizational or other changes without clear and final guidance from FAA. On January 23, 1992, FAA issued final voluntary disclosure program guidelines. The guidelines did not provide the airlines additional assurances that FAA could protect the reports from Freedom of Information Act disclosure. In addition, FAA officials told us that the linking of corrective actions for voluntary disclosures to self-audit procedures could provide an incentive to foster self-audit programs. However, this language was eliminated from the final guidance. Furthermore, according to FAA headquarters officials, separate guidelines for the self-audit program will follow in several months.

Training Limited

Nearly all FAA inspectors we contacted said that they wanted additional training, such as formal courses or organized round table discussions, particularly on the self-audit program. They told us that they had received only a brief lecture during the summer of 1990 as part of a 3-day seminar on FAA's compliance programs. Detailed written guidance on the self-audit and disclosure programs was not available for the lectures, and inspectors said that no follow-up training has been provided. According to a summary of inspector comments on the training: "... confusion over how to get started, who to report information to, what procedures must be followed ... under the new policy continue to hinder full implementation of this initiative."

FAA officials told us that they are including self-audit and voluntary disclosure program training in the course for new inspectors and are planning to distribute a video covering program procedures and inspector attitudes toward compliance. However, FAA has no plans for more specific follow-up training as requested by the inspectors. According to FAA headquarters officials, they would first need to survey inspectors and assess their concerns before determining the additional training needed.

Oversight Weak

According to airline officials and FAA inspectors, FAA's "hands off" approach to oversight of the program has further limited participation. For example, FAA does not plan to approve or monitor airline self-audit systems because the program is voluntary and does not know how many airlines have adopted the guidelines. FAA has established a unit to develop a voluntary disclosure data base and analyze the reports to determine if

additional guidance is needed and whether trends in safety problems are occurring. As of January 1992 the data base was not complete, and no such analysis had been done. The unit has been staffed by only one part-time manager. In October 1991 three temporary employees were provided for 120 days. FAA headquarters officials said that they expect to add staff as the program work load increases but that budget constraints have limited staffing and they do not know when complete staff will be provided.

Data on airline adoption of self-audit programs and voluntary disclosure trends could be valuable in helping judge program progress and adjusting policies and procedures. For example, FAA has encountered a shortage of safety inspectors in recent years, and such data could be used to help target inspections and make more efficient use of inspector time.

FAA's Director, Flight Standards Service, and Assistant Manager, Air Transportation Division, acknowledged that it is preferable to have well-developed guidance and oversight mechanisms in place before starting such programs. However, FAA did not do so because officials did not want to lose the momentum created by FAA's March 1990 announcement of the programs. According to these officials, they focused their limited resources on promoting acceptance of the programs, not on developing guidance for their implementation. However, after 4 years of announcements, the industry appears more interested in substantive implementation issues.

Conclusions

FAA has characterized the self-audit and voluntary disclosure programs as a major change in enforcement policy that could provide needed improvements in safety surveillance. FAA's objectives are laudable, and the programs are similar to improvements long recommended by industry observers. However, basic incentives for the airlines to act on their own are uncertain, and FAA has not clearly articulated basic implementation issues or adequately trained its inspectors. Furthermore, FAA's "hands off" approach to oversight does not convey a strong sense of commitment to the industry. Fundamental FAA improvement is needed for the programs to have a realistic chance to live up to their promise.

Recommendations

To improve program administration, we recommend that the Secretary of Transportation direct the Administrator, FAA, to shift FAA's emphasis from program advocacy to program implementation by (1) surveying FAA's field offices to clarify inspector and airline questions, (2) clarifying and

finalizing written program guidance, (3) providing additional inspector training, and (4) developing appropriate oversight information on participation in both programs and measures of program effects on compliance with safety regulations and FAA operations.

Agency Comments

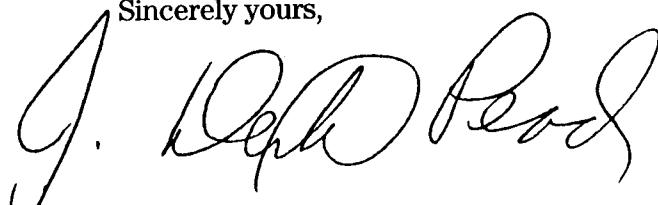
We discussed the information in this report with cognizant FAA officials and incorporated their views as appropriate. As requested, we did not obtain written agency comments on a draft of this report.

Our review was conducted between February and October 1991 in accordance with generally accepted government auditing standards. Appendix IV contains details on our objectives, scope, and methodology.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the Secretary of Transportation; the Acting Administrator, FAA; the Director, Office of Management and Budget; and other interested parties. We will also make copies available to others on request.

This work was performed under the direction of Kenneth M. Mead, Director, Transportation Issues, who may be reached at (202) 275-1000 if you or your staff have any questions. Major contributors to this report are listed in appendix V.

Sincerely yours,



A handwritten signature in black ink, appearing to read "J. Dexter Peach".

J. Dexter Peach
Assistant Comptroller General

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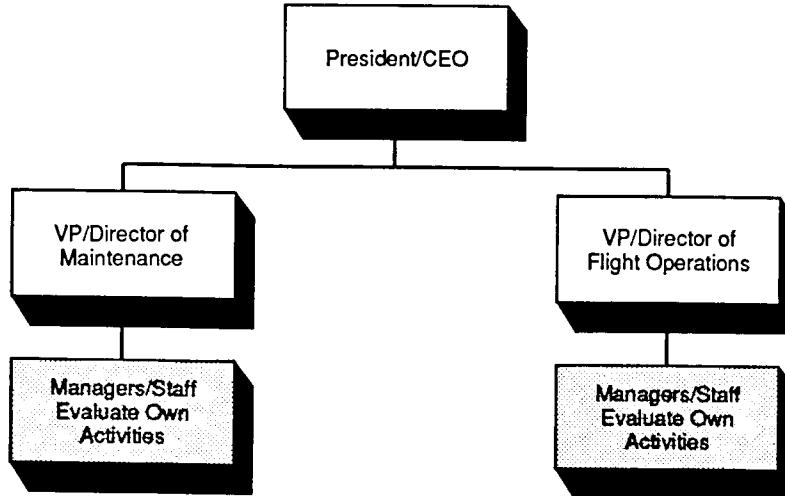
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Abbreviations

FAA	Federal Aviation Administration
GAO	General Accounting Office

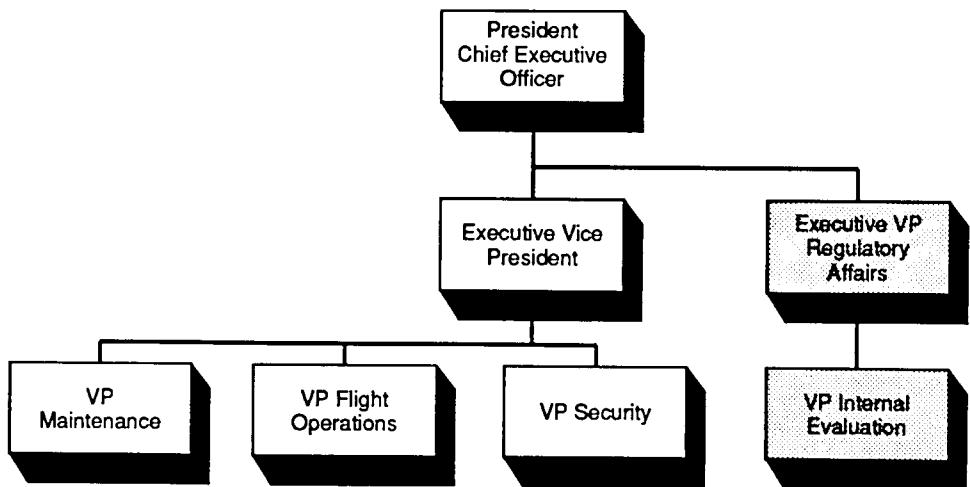
Typical Airlines GAO Reviewed Compared to FAA Self-Audit Organization Models

Figure II.1: Typical Airlines GAO Visited



This model typifies the airlines GAO reviewed. In this model, managers in maintenance and flight operations were responsible for evaluating their own areas, without independent oversight by professional organizations. Three major and five smaller airlines used this approach in maintenance and/or flight operations.

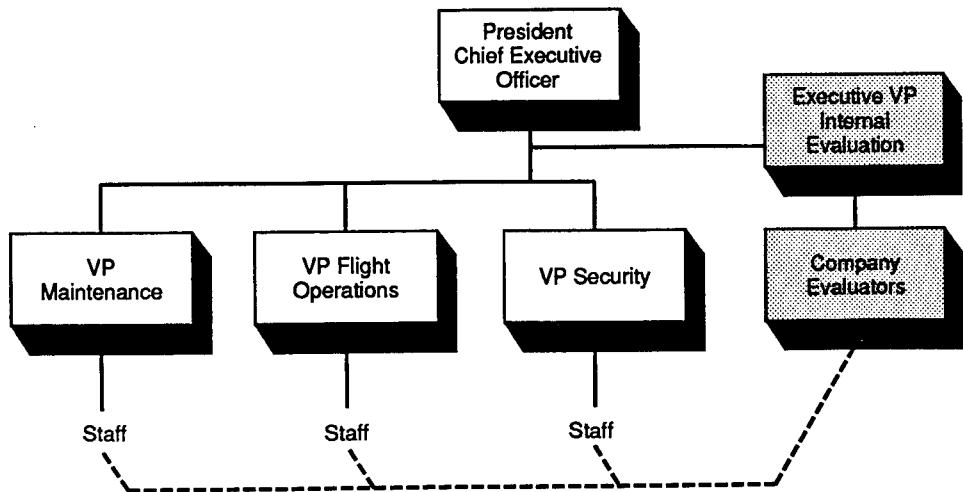
Figure II.2: FAA Suggested Models
FAA Model 1: Dedicated Internal Evaluation Department



FAA model 1 depicts an airline with a full-time, independent evaluation department responsible for comprehensive reviews of all airline operations, with its results reported directly to the CEO. No airline we reviewed adopted this model. Two airlines had full-time, independent evaluation organizations in maintenance, but none had such groups in flight operations.

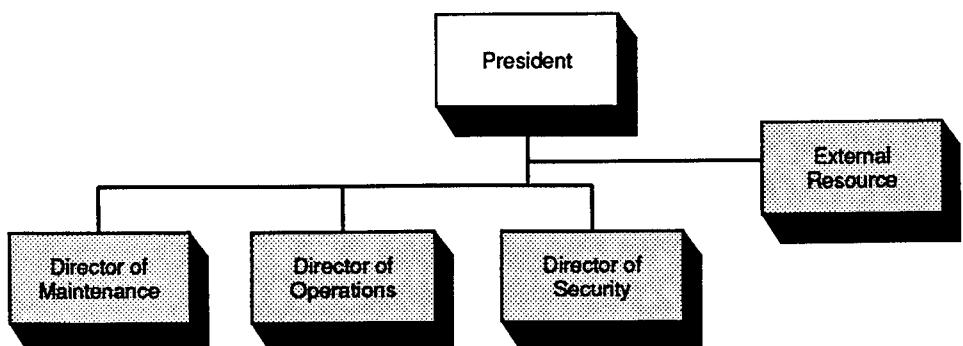
Appendix I
Typical Airlines GAO Reviewed Compared
to FAA Self-Audit Organization Models

**FAA Model 2: Dedicated Individual and
Temporary Evaluators Drawn From
Company Employees**



FAA model 2 depicts an airline with an independent vice president dedicated to overseeing the evaluation function. Company employees are exempted from other duties while acting as temporary evaluators. Four airlines had dedicated managers to internal evaluations, two for flight operations and three for maintenance. However, only one manager was independent of the vice presidents managing maintenance and flight operations.

**FAA Model 3: Internal Managers
Responsible for Evaluations With
External Resource Providing Periodic
Independent Review**



FAA model 3 depicts an airline with managers in maintenance and flight operations also responsible for evaluations in their areas. An external resource, such as an industry association, consultant, or parent company, provides periodic independent and comprehensive evaluations. Nine airlines allowed managers in maintenance or flight operations to evaluate their own areas, but only two routinely underwent periodic evaluations by independent organizations in maintenance or flight operations.

Shaded areas identify location of evaluation functions.

Notes: Chief Executive Officer (CEO)
Vice President (VP)

10 Airlines' Compliance With FAA's Draft Self-Audit Guidelines

Table II.1: Major Airlines

Guideline	Major airlines*							
	Airline 1		Airline 2		Airline 3		Airline 4	
	M	O	M	O	M	O	M	O ^b
I. Independence/defined responsibility								
1. Dedicated internal evaluation department	no	no	yes	no ^c	no	no	yes	no
2. Dedicated individual	yes	yes	no	yes	no	no	no	no
3. Organization/individual independent of areas evaluated	no	no	no	no	no	no	yes	no
4. No dedicated organization, managers/staff evaluate own activities	yes	yes	no	yes	yes	yes	no	yes
5. External group periodically conducts independent evaluations	no	no	no	no	no	no	no	yes
II. Top management review								
1. Straight line reporting to top management	no	no	no	no	no	no	yes	yes
2. Top management review at scheduled intervals	no	yes	yes	no ^c	yes	yes	yes	yes
III. Continuous process								
1. Continuous monitoring	yes	yes	yes	no ^c	yes	yes	yes	yes
2. Analysis go beyond regulatory compliance to determine cause	yes	yes	yes	no ^c	yes	yes	yes	yes
3. Employee views formally encouraged	yes	yes	no ^c	yes	yes	yes	yes	yes
IV. Written schedule for evaluations								
V. Written corrective actions plans with implementation schedule, monitoring, and responsible person	yes	no	yes	no ^c	yes	yes	no	no
VI. Maintain complete records								
1. All records available for FAA review unknown	yes	yes	no	no	yes	yes	yes	unknown

*Major airlines have annual operating revenues in excess of \$1 billion, national airlines between \$100 million and \$1 billion, regional airlines less than \$100 million.

^bM = Maintenance; O = Flight Operations

^cPlanned

Appendix II
10 Airlines' Compliance With FAA's Draft
Self-Audit Guidelines

Table II.2: National and Regional Airlines

Standard	National and regional airlines											
	Airline 5(N) Air		Airline 6(R) Air		Airline 7(R) Air		Airline 8(R) Air		Airline 9(R) Air		Airline 10(R) ^b	
	M	O	M	O	M	O	M	O	M	O	M	O
I. Independence/ defined responsibility												
1. Dedicated internal evaluation department	yes	no	no	no	no	no	no	no	no	no	no	no
2. Dedicated individual	no	no	no	no	yes	no	yes	no ^a	no	no	no	no
3. Organization/ individual independent of areas evaluated	yes	no	no	no	yes	no	no	no ^a	no	no	no	no
4. No dedicated organization, managers/staff evaluate own activities	no	yes	yes	yes	no	no	no	yes	yes	yes	yes	yes
5. External group periodically conducts independent evaluations	no	no	yes	yes	no	no	no	no	no	no	no	no
II. Top Management Review												
1. Straight line reporting to top management	yes	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes
2. Top management review at scheduled intervals	yes	no	yes	no	yes	no	no	no	yes	yes	yes	yes
III. Continuous process												
1. Continuous monitoring	yes	yes	yes	yes	yes	no	yes	no	yes	yes	yes	yes
2. Analysis go beyond regulatory compliance to determine cause	no	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
3. Employee views formally encouraged	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	no
IV. Written schedule for evaluations												
V. Written corrective action plans with implementation schedule, monitoring, and responsible person	no ^a	no	no	no	yes	no	no	no	no	no	no	no
VI. Maintain complete records												
1. All records available for FAA review	yes	yes	yes	yes	no	yes	yes	yes	no	no	yes	yes

^aPlanned

^bN = National; R = Regional

Source: GAO interviews with airline officials.

Summary of Voluntary Disclosures Reviewed by GAO

Functional area	Synopsis of violation
Flight Operations	Special oxygen equipment not installed for high terrain flights.
Maintenance	Aircraft operated without proper service check, inspection, or logbook entry.
Maintenance	Aircraft inspections performed out of sequence.
Maintenance	Improperly connected evacuation slide failed to inflate when tail cone accidentally deployed.
Maintenance	Aircraft operated for 18 days with emergency slide deactivated.
Maintenance	Aircraft operated over 20,000 flights with nonairworthy equipment.
Maintenance	Aircraft allowed to continue in service with improper engine maintenance and repair.
Maintenance	Three aircraft operated with parts that exceeded replacement time.
Maintenance/Avionics	Aircraft operated without cockpit background lights.
Maintenance/Avionics	Aircraft operated eight flights without cockpit glareshield lighting.
Maintenance/Avionics	Aircraft continued in service while failing to comply with an airworthiness directive.
Maintenance/Avionics	Aircraft operated for 5 months with nonairworthy (simulator) part installed.
Maintenance	Engine turbine hub operated beyond approved life limit.
Flight Operations	Crew of 19 pilots used on 272 flights without completing required recurrent training.
Maintenance	Oil cap left off tank causing loss of oil and diversion of aircraft to another airport.
Maintenance	Wheel chock left in aircraft landing gear causing diversion of flight.
Maintenance	Failure to track certain maintenance requirements.
Maintenance	Aircraft operated with compressor disks that exceeded mandatory replacement times.
Maintenance/Avionics	Failure to include an airworthiness directive in inspection requirements, resulting in operation of an aircraft with inappropriate coupling assemblies.
Maintenance/Avionics	Two aircraft operated for 8 months with nonairworthy elevator spar.
Maintenance	Failure to inspect outboard spoiler panel after installation in aircraft.
Flight Operations	One crew member used on 17 flights with a lapsed engineer proficiency check.
Maintenance	Failure to comply with airworthiness directive regarding detection of installation errors in the evacuation system.

(continued)

Appendix III
Summary of Voluntary Disclosures
Reviewed by GAO

Functional area	Synopsis of violation
Maintenance	Failure to provide all required inspections of a B-747 aircraft.
Maintenance	Oil differential pressure switch connected to wrong parts on Boeing 767 aircraft.
Maintenance	Boeing 747 lost high frequency antenna coupler access panel while in flight.
Maintenance	Two Boeing 737's operated with overdue airworthiness inspections.
Maintenance	Failure to locate inspection record for 727 aircraft.
Maintenance	DC-10 aircraft operated 292 flights with a blanket and seat cushion in fuel tank.
Maintenance	Boeing 737 operated without engine accessory unit installed.
Maintenance	Boeing 747 operated with overdue inspection of engine aft rail diffuser case.
Maintenance	Boeing 767 operated on two flights with improper engine flight/ground idle system.
Maintenance	Cabin door evacuation slide overdue for overhaul by 67 days.
Maintenance	Two Boeing 737s operated with cargo door fittings overdue for required airworthiness directive inspections.
Maintenance	Three Boeing 747s operated with overdue airworthiness directive inspections.
Maintenance	Three Boeing 767s operated for 1,435 hours without required cable inspections. Boeing 747 operated 1,105 hours over recommended life of auxiliary power unit circuit breaker.
Maintenance	Incorrect maintenance procedures leading to overtightened bolts on 11 DC-9 aircraft.
Maintenance	Failure to comply with an airworthiness directive regarding aircraft inspections for 629 days.
Maintenance	Aircraft operated for 4 days with improperly welded power lever.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Aviation, House Committee on Public Works and Transportation, asked us to determine the extent to which airlines have developed self-audit programs and are voluntarily reporting violations and the adequacy of FAA's guidance and oversight. We did not examine airline security programs because FAA had not published detailed guidance when we began our work.

To meet our objectives, we interviewed FAA officials and inspectors in the Flight Standards Service in 10 field offices and Washington, D.C.; officials at 10 passenger airlines; and industry officials in the Air Line Pilots Association, Air Transport Association, Regional Airline Association, and National Transportation Safety Board. We also analyzed statistical data and reviewed GAO reports and FAA and industry studies pertaining to airline safety evaluation systems.

In addition, we judgmentally selected 10 airlines using information from the Department of Transportation's Air Carrier Industry Scheduled Service Traffic Statistics Quarterly and Air Carrier Traffic Statistics Monthly. We selected the nation's four largest passenger airlines, three smaller airlines, and three airlines to match industry averages in various size categories and provide regional diversity. These airlines carried about 57 percent of the nation's scheduled passengers during the 12 months ending September 30, 1990. Because of the manner in which we selected the 10 airlines, our findings cannot be used to generalize to the universe of 3,031 carriers eligible for the programs.

To determine the success of the self-audit program and the overall adequacy of FAA guidance, we conducted structured interviews with over 40 officials at the selected airlines and 26 FAA principal inspectors responsible for overseeing them. We based our questions on FAA's draft Advisory Circular 120-XX, published in the Federal Register on October 30, 1990, and draft Air Carrier Internal Evaluation Model Program Guide, September 14, 1990, that apply to both programs. The 10 FAA field offices we visited are located in 6 of the 9 FAA regions.

To determine nationwide participation in the voluntary disclosure program, we analyzed voluntary disclosures reported to FAA's Enforcement Information System between March 1, 1990, and September 30, 1991, and compared these reports with violations that FAA inspectors identified during the same period. In addition, we reviewed 39 of the 42 voluntary disclosures made by the 10 selected airlines.

Appendix IV
Objectives, Scope, and Methodology

Our review was conducted between February and October 1991 in accordance with generally accepted government auditing standards.

Major Contributors to This Report

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Community, and
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